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TECHNICAL NOTES

LAKE STATES FOREST EXPERIMENT STATION
U.S. DEPARTMENT OF AGRICULTURE · FOREST SERVICE

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August-Collected Cones Yield Poor Red Pine Seed

Past work by the Station has shown that the seed of red or Norway pine is not of top quality until the cones have turned deep purple with the tips of the scales showing brown. At this time, freshly picked cones have a specific gravity of 0.85 and will float in kerosene (Technical Note No. 170). Once this degree of maturity is reached, there is usually a 20- to 30-day period during which the cones may be harvested without appreciable loss of seed. There is consequently no excuse for the collection of unripe cones.

The serious loss in seed quality that occurs when these simple indications of cone maturity are ignored is emphasized by the results of a test made on two lots from the heavy 1957 crop of red pine seed. One of these lots was a representative sample of the seed from about 200 bushels of cones collected during the third week of August when the cones were still green; the other came from a slightly larger cone lot collected about 3 weeks later in the middle of September.

Shortly after collection both lots were spread out in sheds to dry. In October they were run through a standard kiln with forced circulation and controlled temperature and humidity. The seed was then shaken from the cones, cleaned, and stored at 50° F. until the time of testing in mid-November.

Germination tests made in petri dishes showed striking differences in quality between the seed from the two collection dates. First was a difference in soundness. Although the two lots were given identical cleaning treatment, the August lot showed 8 percent empty seeds compared with none for the September collection. More important, however, was the difference in germination; only 54 percent of the filled seeds of the August lot germinated compared with 85 percent for those from the September cones. The expected nursery germination of the August seed would therefore be 22 to 38 percent (0.4 to 0.7 of laboratory germination), which rates the seed as of dubious value. Furthermore, the August seed was heavily contaminated with mold, which probably would reduce nursery germination even more.

Another count against these green cones was their higher extraction cost and lower yield. Not only were the August cones much more difficult and hence more costly to open, but they yielded only 10½ ounces of clean seed per bushel compared with 13½ ounces for the cones collected in September. The difference of more than 20 percent resulted in an appreciably higher cost of production for this decidedly inferior seed.

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Obviously red pine cones cannot be gathered in August and still produce a good yield of high-quality seed. Even the middle of September can be too early, for the seed produced by such cones in 1957 showed only 85-percent germination. This is at least 10 percent lower than the germination which experience indicates should be obtained for the best red pine seed in petri-dish tests.

Since red pine cone development varies with weather conditions, cone maturity cannot be foretold from the calendar with any assurance. Much more reliable is the method described in Technical Note No. 170. If the majority of freshly picked cones from several representative trees in the stand will float in kerosene, the cones are mature and should produce seeds of high quality.

Similar guides have been developed for determining ripeness of white pine and white spruce cones. Further research should be conducted to determine if flotation cannot be used to determine maturity in the cones of other important Lake States conifers.

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EUGENE I. ROE, Forester